Newtec

SHAPING THE FUTURE OF SATELLITE COMMUNICATIONS

Sat3Play Point&Play Manual

Version 1.0 - January 2008

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1 Introduction

About this guide

This guide provides a step-by-step procedure to install the **Sat3Play** terminal (consisting of the antenna and the IPmodem).

Before installing

Before starting to install the antenna, it is important to read the following sections:
- Safety precautions (page 5)
- Material provided in the box (page 7)
- Material you need to provide yourself (page 9)

Follow the entire procedure

When installing the antenna, it is important that you follow the entire procedure step-by step. When pointing the antenna, you may need to repeat the steps from the section **Rough pointing: horizontal (azimuth) (page 36)** onwards to obtain optimal signal reception and transmission.

Related documentation

When installing the satellite dish, you will need to refer to the following documents:
- The Antenna Pointing Information document, which contains the geographical pointing data (leaflet included in the box);
- The software user manual (document included in the box);
- Terminal User Manual (available on the cd included in the box).

Proprietary & Confidential

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Safety precautions

This section lists the safety precautions to follow when installing the antenna.
Safety precautions are grouped into warnings and cautions.

Local regulations

Always install the Sat3Play antenna in accordance with local regulations.

Warnings

A **warning** refers to an action or situation that could result in **injury, long term health hazard or death** if you do not follow the instructions.

Antenna

- RF Radiation Hazard. The transmitting equipment is capable of generating RF levels above the maximum permissible exposure level. Do not enter the radiation beam pattern of the iLNB or the antenna dish when the transmitter is on. Keep the space between the iLNB and the antenna dish clear.

IPmodem

- There are no user-serviceable parts in the IPmodem. There are potentially lethal voltages inside the equipment. It should only be opened by a technician trained and certified to service the product.
- When the IPmodem is powered on, DC voltages are present on the rear panel Tx and Rx connectors.
- Do not expose the IPmodem to rain or moisture to prevent fire or shock hazard. Do not expose the IPmodem to dripping or splashing and do not place any objects filled with liquids, such as vases, on it.
- Postpone antenna and IPmodem installation until there is no risk of thunderstorm or lightning activity in the area.
- To prevent electrical shock, if the unit is provided with a polarized plug, do not connect the plug into an extension cord, receptacle or other outlet unless the plug can be fully inserted with no part of the blades exposed.
- Connect the in-line power supply input power cord to a properly grounded three-prong AC outlet. Do not use adapter plugs or remove the grounding prong from the plug.
- Do not use the in-line power supply power cord when damaged in any form.

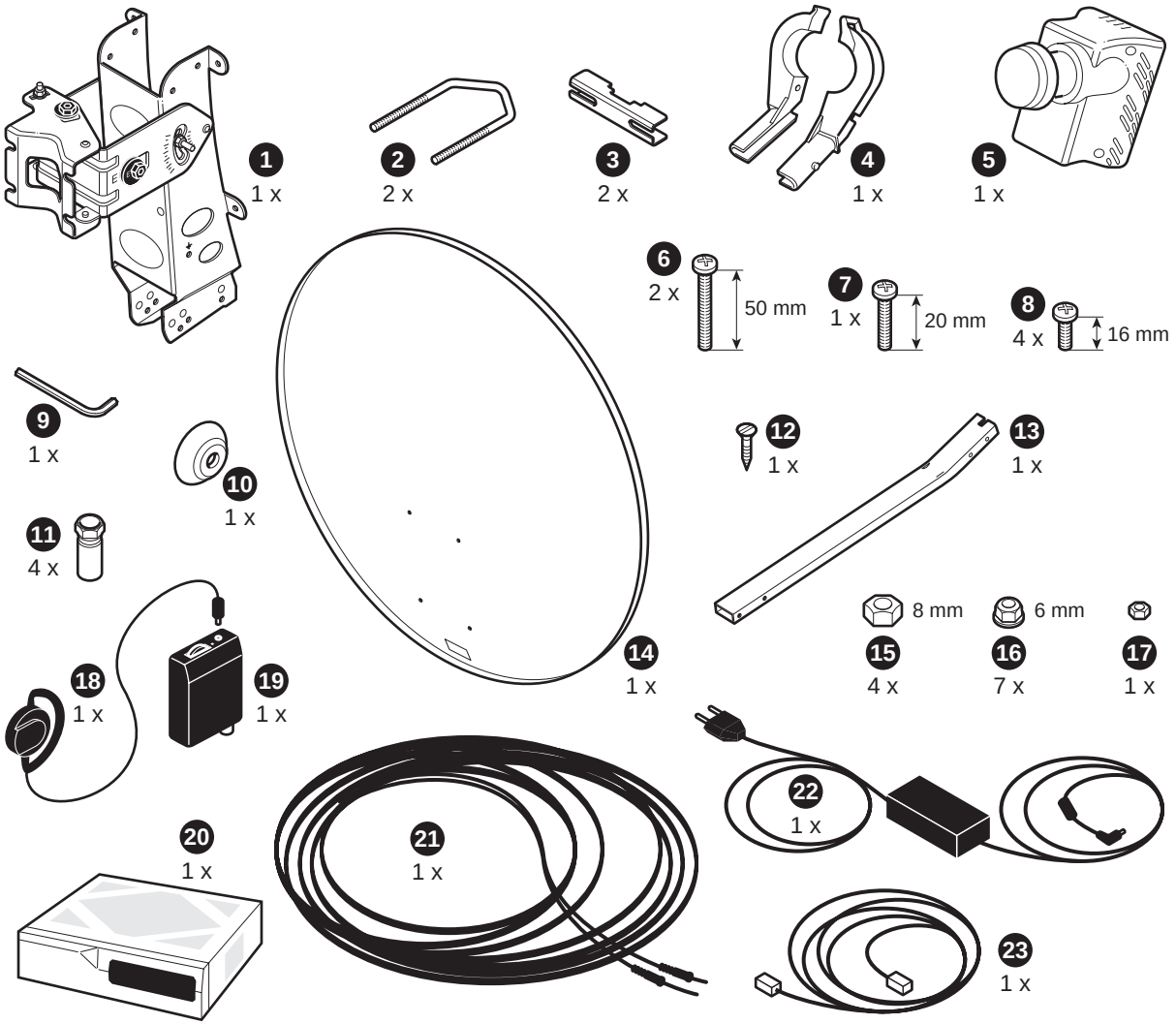
Cautions

A **caution** refers to an action or situation that could result in **equipment damage or destruction** if you do not follow the instructions.

IPmodem

- Always use the in-line power supply with the IPmodem. Using a different power supply may cause equipment damage.
- To ensure regulatory and safety compliance, use only the provided power and interface cables or cables which conform to the specifications within this manual.
- Do not open the unit. Do not perform any servicing other than that contained in the installation. Refer all servicing to qualified service professionals.
- Avoid damaging the IPmodem with static by first touching the coaxial cable connector when it is attached to the earth grounded coaxial cable wall outlet. Always first touch the coaxial cable connector on the Sat3Play IPmodem when you are disconnecting or re-connecting your Ethernet cable from the Sat3Play IPmodem or your PC.
- To prevent overheating, do not block the ventilation holes on the sides and top of the unit.
- Only wipe the IPmodem with a clean, dry cloth. To avoid equipment damage, never use fluids or similar chemicals. Do not spray cleaners directly on the unit or use forced air to remove dust.
- Install an AC surge arrestor in the AC outlet to which the IPmodem is connected. This will avoid damage to the equipment by local lightning strikes and other electrical surges.

Material provided in the box



Material provided in the box: list

Number on figure	Item	Quantity
1	Masthead	1
2	Brackets	2
3	Pole clamps	2
4	iLNB clamp	1
5	iLNB (Interactive Low Noise Block downconverter)	1
6	Screw 50 mm M6	2
7	Screw 20 mm M6	1
8	Screw 16 mm M6	4
9	Hex key	1
10	Cap	1
11	F-connectors	4
12	Parker Screw	1
13	Feed arm	1
14	Satellite dish	1
15	Nut M8	4
16	Nut M6	7
17	Grounding nut	1
18	Headphone	1
19	Point&Play Tool	1
20	IPmodem	1
21	Coax cable	1
22	Power adapter	1
23	Network (ethernet) cable	1
	CD and documentation	

Material you need to provide yourself

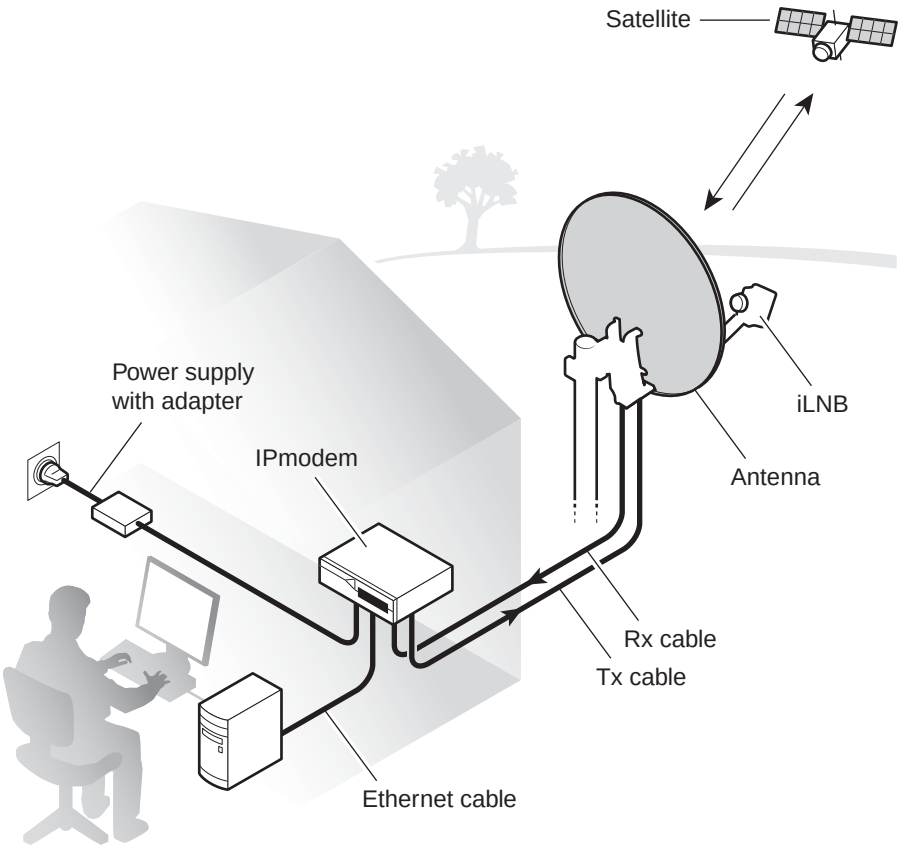
- A solid base for the antenna;
- An antenna pole;
- A Phillips head screwdriver PZ2;
- Ppen-end spanners of 10, 11 and 13mm;
- Tie-wraps;
- A cutter;
- A compass;
- A spirit level;
- A grounding cable;
  This cable needs to meet the following specifications: UL style 1007/1569, PVC insulated, 300V, 80°C (C.S.A. Type TR-64) 18AWG, Yellow/Green attached to 4,3 mm insulation and 5,0 mm non-insulation supported ring terminal.
- Geographical pointing data, available in the **Antenna Pointing Information** document.

Antenna pole requirements

- The antenna pole must be installed on a solid base.
- The pole must be made of **galvanized steel**.
- Minimum diameter: **40 mm**.
- Maximum diameter: **70 mm**.
- The antenna pole needs to be **grounded** according to local regulations. Consult with a licensed electrician if in any doubt.

Installation overview

The image below shows the results of a **typical installation** as described in the following pages. Please read these pages carefully to perform the installation.



2 Setting up the antenna

Assuming you already have a solid base (made of concrete, or firmly attached to a wall), installing the antenna includes the following steps:

Step 1 - Choosing a suitable location (page 12)
Step 2 - Mounting the antenna pole (page 13)
Step 3 - Mounting the antenna (page 14)
Step 4 - Fixing the antenna cabling (page 21)
Step 5 - Pointing the antenna (page 29)

Step 1 - Choosing a suitable location

Outdoors: antenna

- When setting up the antenna base, take account of the **orientation** the antenna must have. Orientation data are available in the **Antenna Pointing Information document**.
- The antenna needs a **clear view** towards the satellite (without any buildings, trees... that may hinder the signal).
- To connect the antenna to the IPmodem, you will use coax cable. You can use the coax cable provided in the box or a cable of your choice.
- The coax cable connecting the antenna to the IPmodem must not exceed 30 meters. The coax cable included in the box is 30 meters long.

About your Sat3Play Terminal

For more information on the Sat3Play Terminal, refer to the section Getting to know your Sat3Play Terminal in the Manual for Sat3Play terminal (available on the cd included in the box).

Indoors: IPmodem and computer

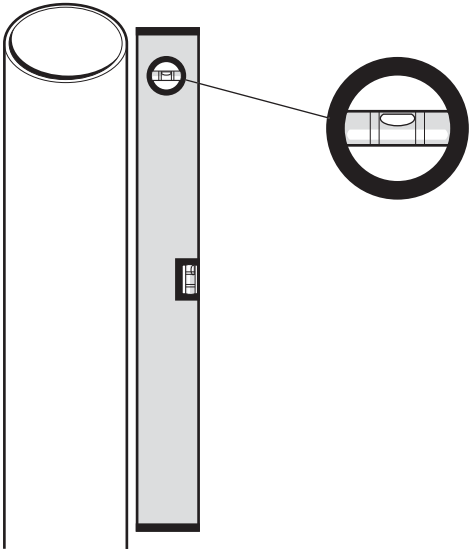
Put the IPmodem in a dry room.
Indoors, you will need to connect the IPmodem:

- To the **antenna** (with the coax cable);
- To your **computer** (with a network cable). You can use the network cable provided in the box or a cable of your choice (for example if you need a longer cable to connect the IPmodem to your computer);
- To a **wall outlet** (with the power adapter provided in the box).

These steps are described further in this document.

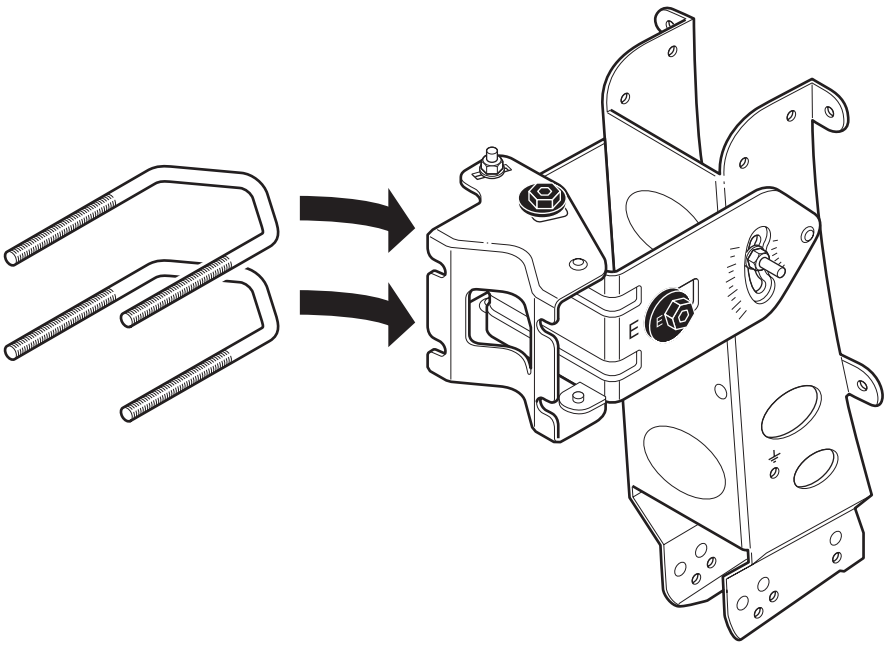
Step 2 - Mounting the antenna pole

When fixing the antenna pole on the base, use a spirit level to make sure the antenna pole stands upright.



Step 3 - Mounting the antenna

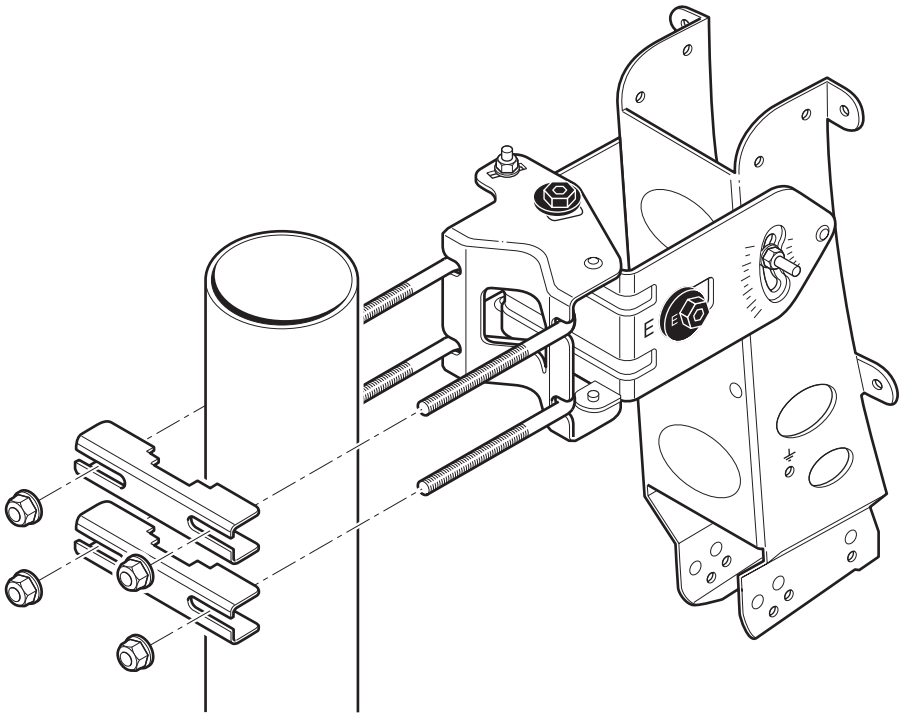
1 Insert the 2 brackets in the masthead (as shown).



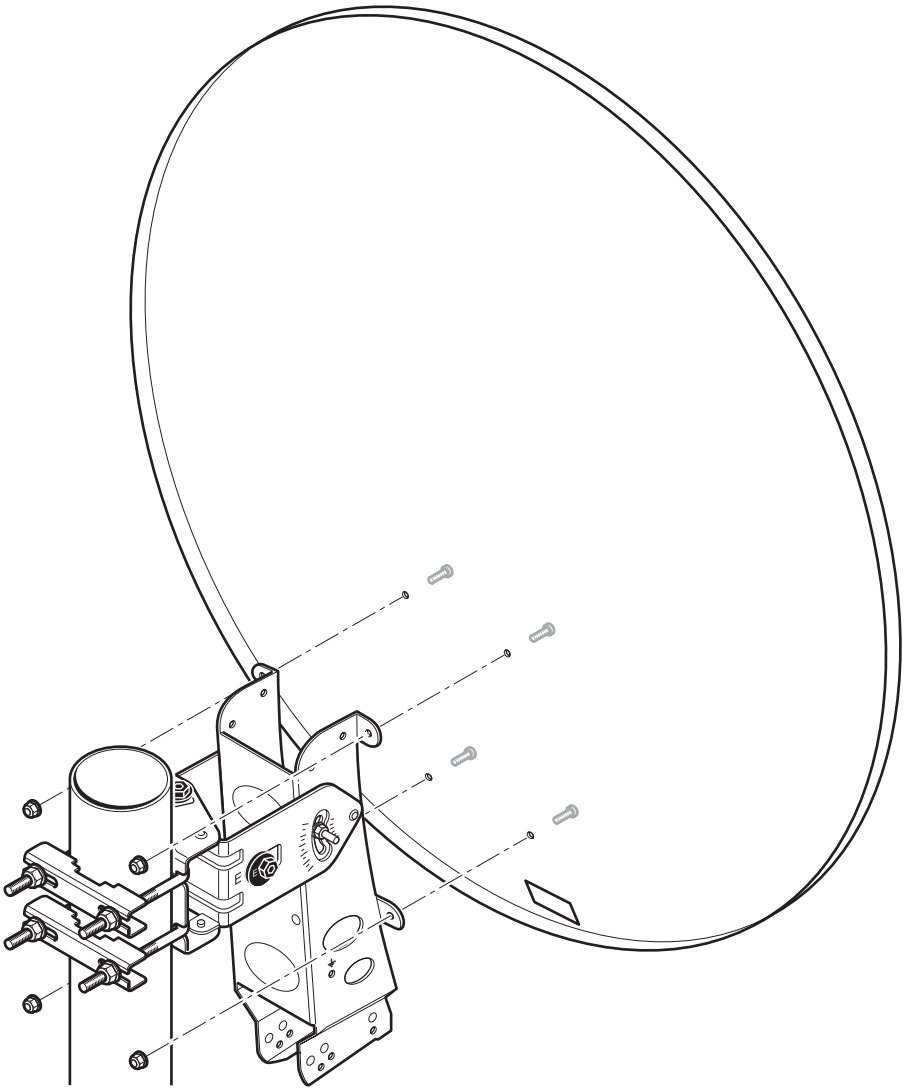
2 Use the 2 pole clamps and nuts to attach the masthead to the pole.

- If the pole is low enough, you can first assemble the masthead, brackets and clamps and slide the assembly over the antenna pole.
- If the pole is too high or does not have an open ending, you will have to fix the masthead around the pole.
- Do not attach the clamp too tightly as you will need to adjust it later on, but make sure the clamp is attached tightly enough to prevent it from sliding down the pole.

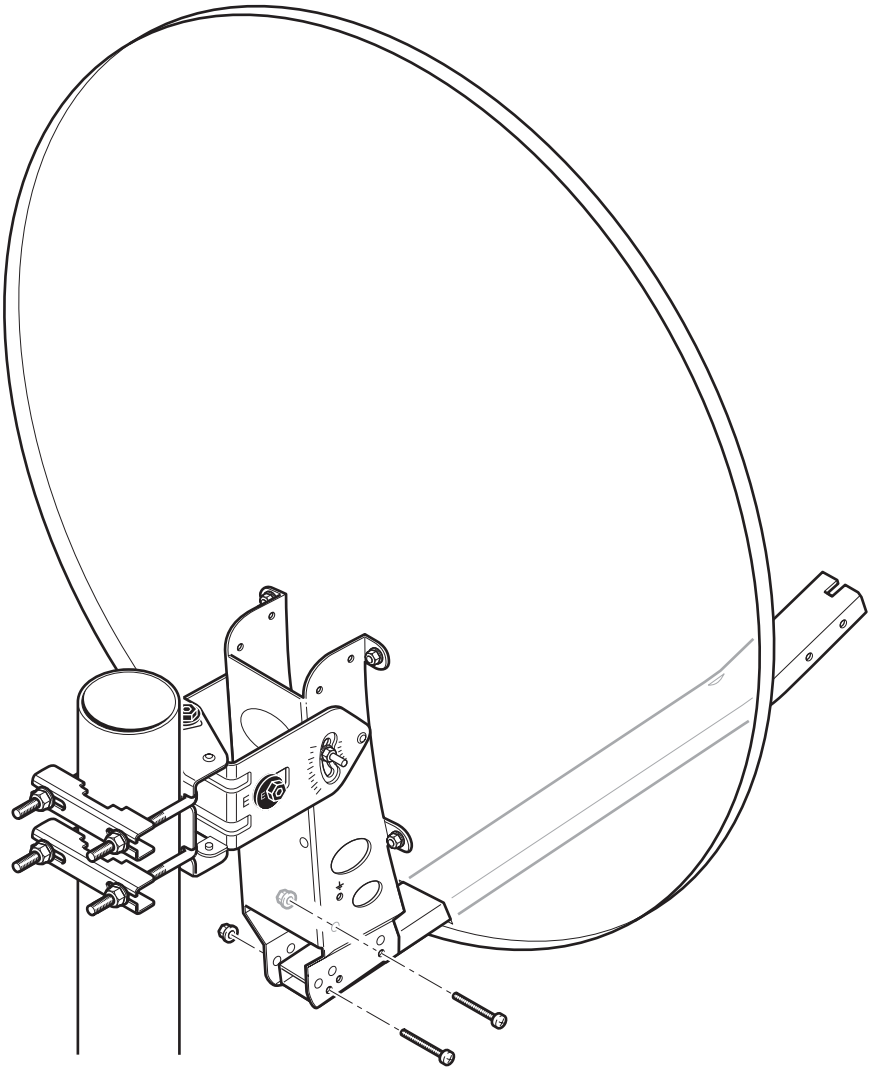
- Make sure the masthead is already pointing in the general direction of the satellite. To do so, use the pointing data available in the **Antenna Pointing Information** document.
- Make sure to attach the masthead upright to the pole.



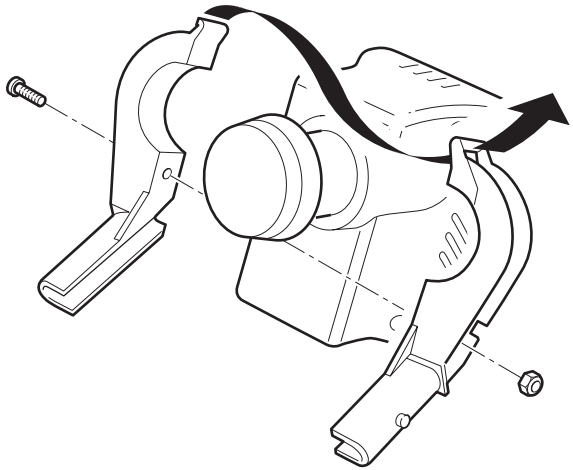
3 Attach the dish to the masthead with the appropriate screws and nuts.



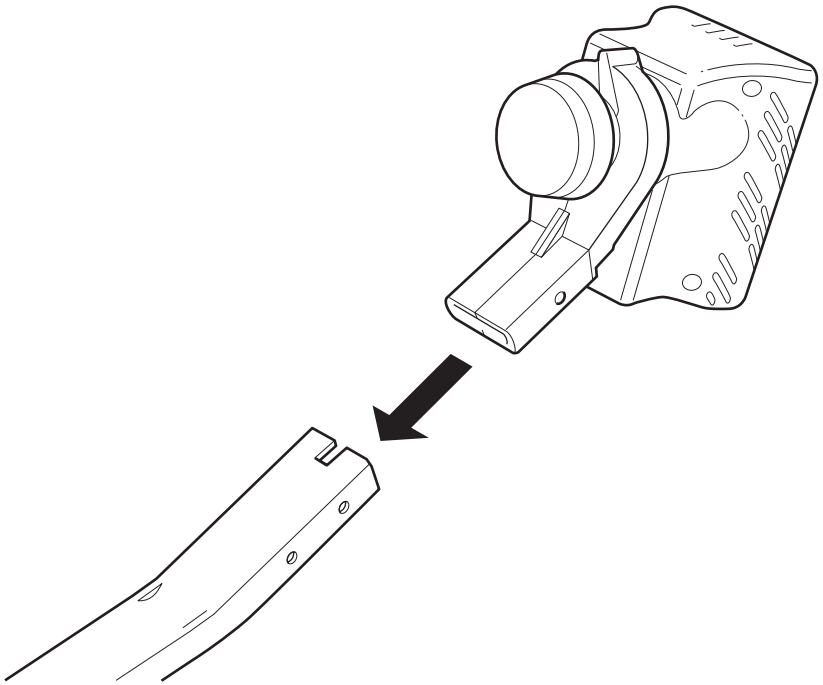
4 Insert the feed arm in the cut-away at the bottom of the dish and fix the arm with the appropriate bolts.



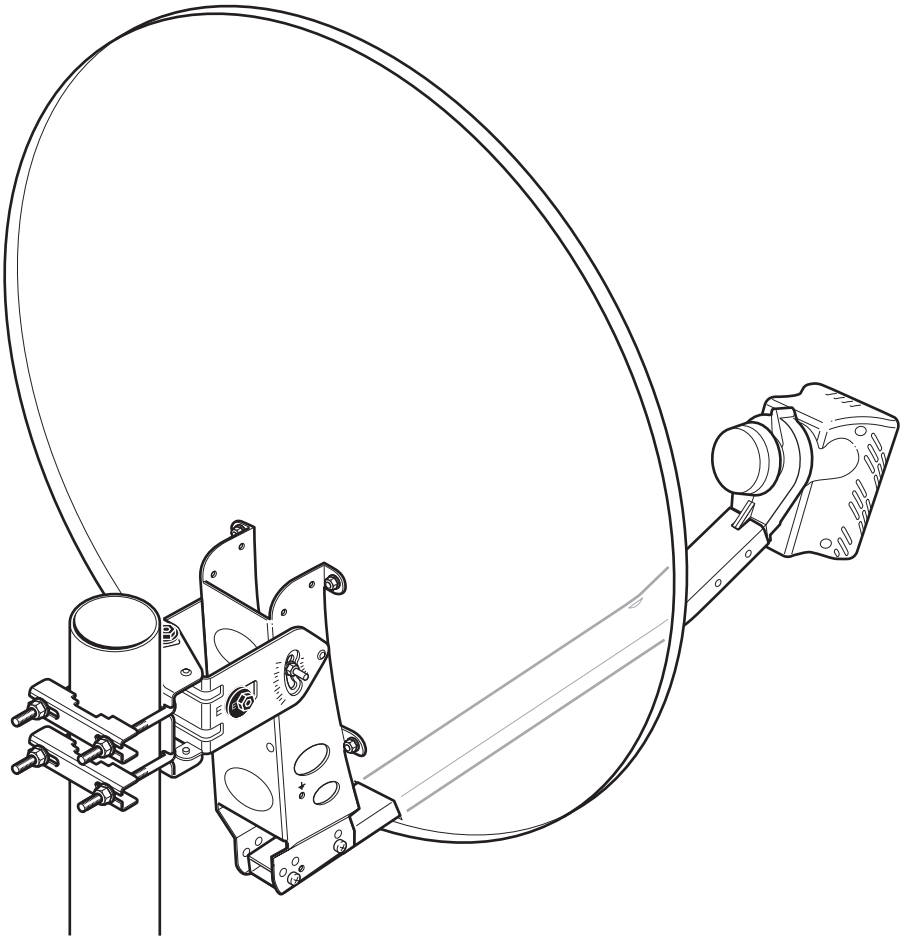
5 Attach the clamp around the iLNB using the appropriate nut and bolt.
Do not to attach the clamp too tightly as you will need to adjust it later on.



6 Slide and click the iLNB clamp into the feed arm.



The antenna is mounted. The result should look like the figure below.



Step 4 - Fixing the antenna cabling

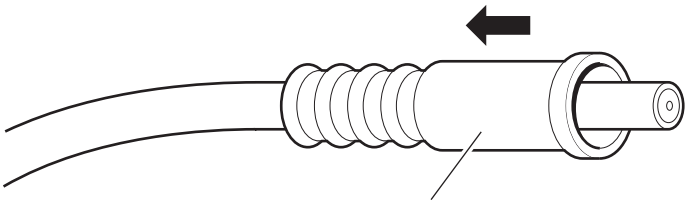
Fixing the antenna cabling includes the following steps:

- Connecting the F-connectors on the coax cable (page 22)
- Connecting the iLNB to the IPmodem (page 24)
- Grounding the iLNB (page 25)
- Adjusting iLNB polarisation (page 26)
- Connecting the IPmodem to your computer (page 28)

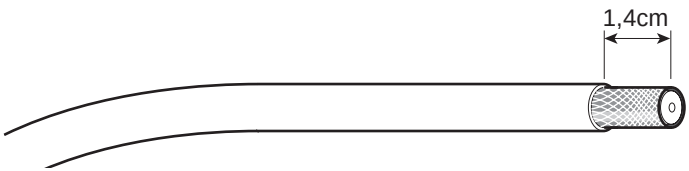
Connecting the F-connectors on the coax cable

You will need a cutter (and possibly pliers) to connect the F-connectors. To connect an F-connectors to a cable:

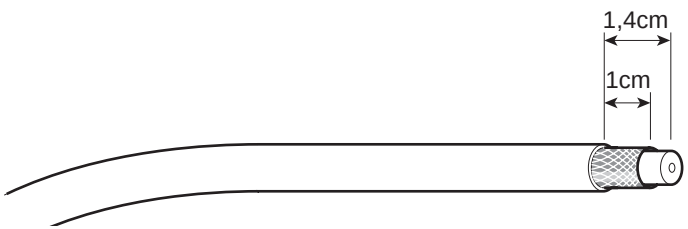
1 For the **outdoor end of the cable**, first slide the rubber boots over the coax cable.



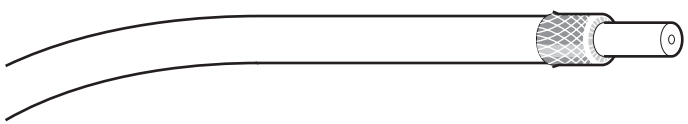
2 Strip the coax cable as shown below. Do not remove the aluminium foil or fold it back.



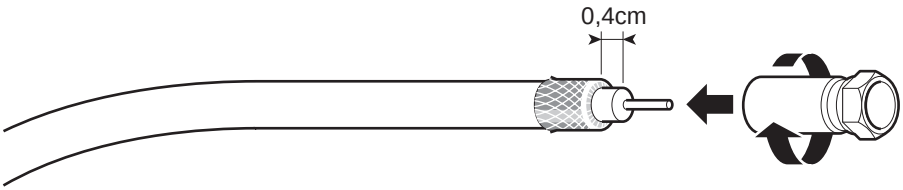
3 Strip the coax cable further as shown below.



4 Fold the wire shielding backwards over the cable jacket.



5 Cut away the plastic shield as shown below and screw the F-connector to the wire by hand. The result should look like the figure below (example showing the indoor end of the cable).



Repeat this procedure for all 4 F-connectors.

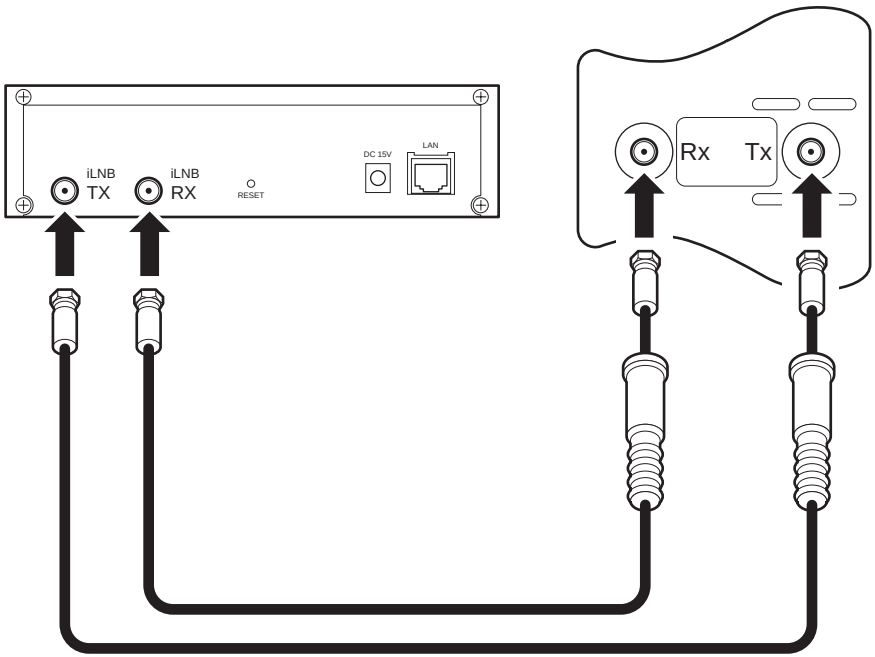
Connecting the iLNB to the IPmodem

To connect the iLNB (Interactive Low Noise Block downconverter) to the IPmodem:

1 Identify the cables marked RX and TX on the coax cables (these marks are print on the cables every 50 cm).

2 Put the TX and RX connectors in the appropriate RX and TX jacks on the iLNB.
The outdoor connections need to be waterproof:
- Make sure to use the outdoor connectors (with rubber boots) for the iLNB.
- When the cables are connected, slide the rubber boots over the connectors.

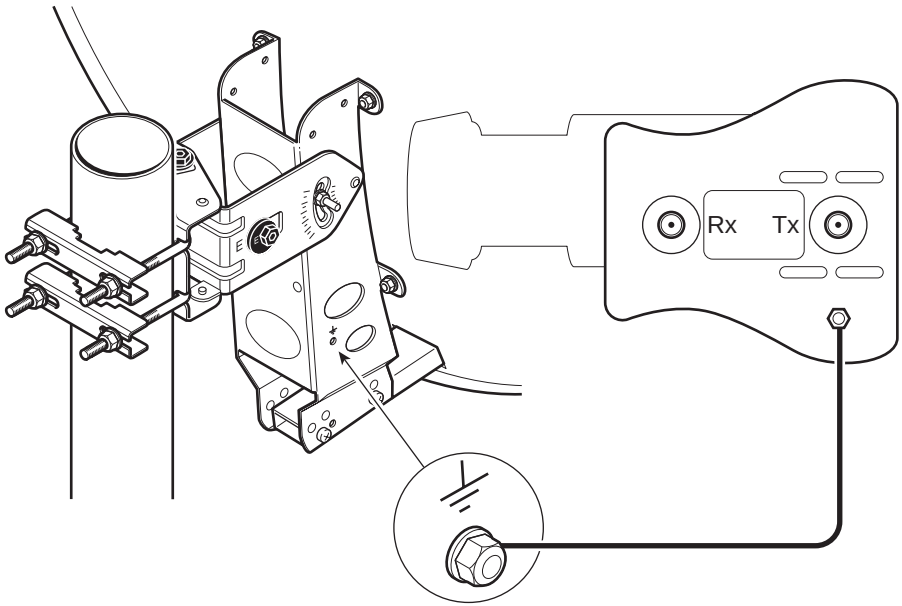
3 Put the indoor TX and RX connectors in the appropriate RX and TX jacks on the IPmodem.
Use an 11 mm spanner to screw the connectors on the IPmodem.



Grounding the iLNB

As you will use the antenna for internet access, you need to **ground** the antenna. To do so, you need a grounding wire (for grounding wire specifications, see page page 9) and a bolt fitting the grounding connection on the masthead. The iLNB has a stud that you can use to ground it.
To ground the iLNB:

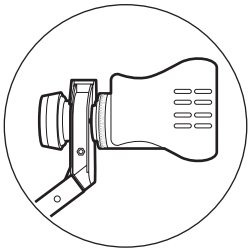
1. Connect the grounding wire to the stud on the iLNB.
2. Connect the wire to the grounding connection on the masthead.



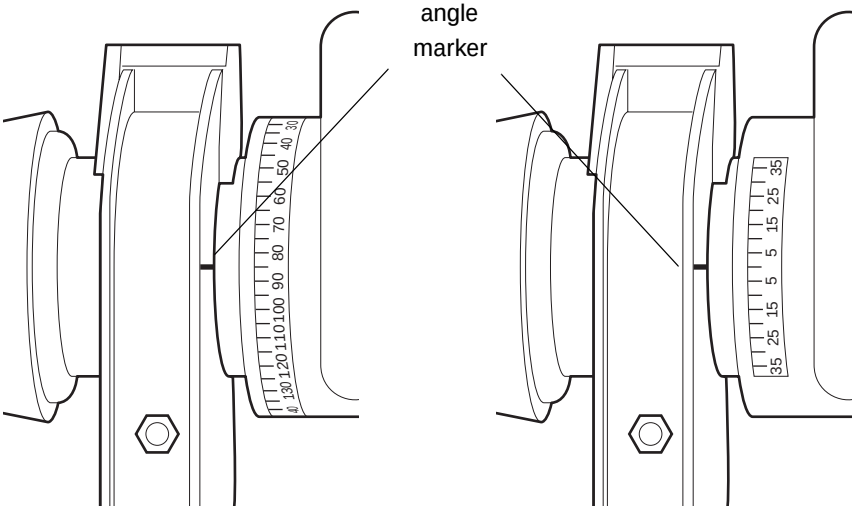
Adjusting iLNB polarisation

Polarisation of the iLNB allows correct data reception and transmission.
To adjust iLNB polarisation:

1 Check the scaling of your iLNB. Depending on the type of iLNB you have, the scaling of the iLNB may range:
- from 0 to 180°
- from -35 to +35°



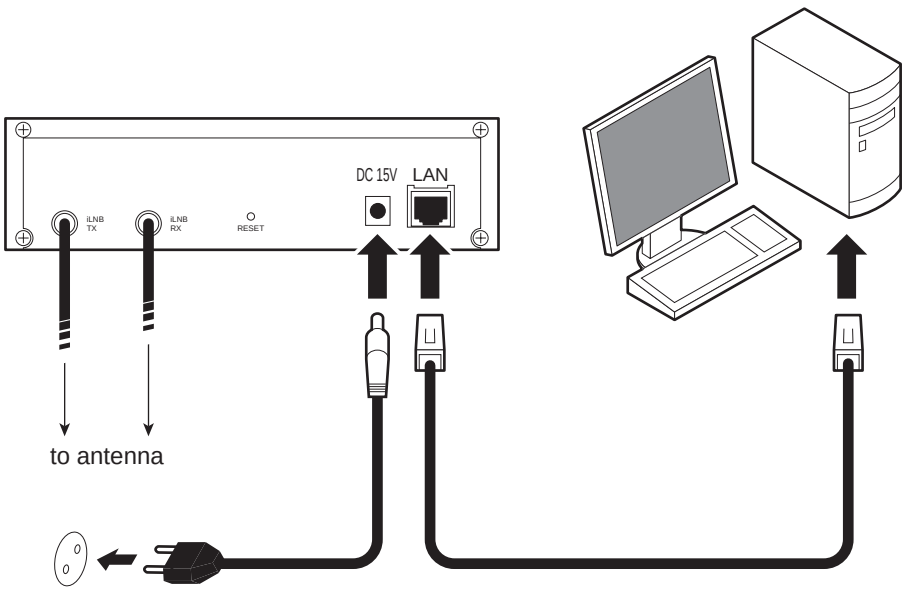
iLNB side view



2 In the **Antenna Pointing Information** document, look up the value that applies to the city closest to your position.
3 Set the iLNB to the angle you have found in the document.
4 Lock the iLNB in the clamp with the securing bolt available on the iLNB.

Connecting the IPmodem to your computer

1. Plug the network cable in the IPmodem's and your computer's ethernet ports. You can use the network cable provided in the box or a cable of your choice.
2. Use the power adapter provided in the box to connect the IPmodem to a **wall outlet**. The result should look like the figure below.



Step 5 - Pointing the antenna

Pointing the antenna includes the following steps:

- Setting the IPmodem software to pointing mode (page 30)
- Using the Point&Play Tool (page 32)
- Rough pointing: horizontal (azimuth) (page 36)
- Rough pointing: vertical (elevation) (page 34)
- Fine-pointing the antenna (page 39)
- Checking the antenna pointing (page 42)
- Confirming antenna pointing in the software (page 44)

Warning

Do not stand in front of the iLNB or the antenna dish during pointing. Keep the space between the iLNB and the antenna dish clear.

Setting the IPmodem software to pointing mode

Before you start
The procedure below assumes:
- that your computer is DHCP enabled;
- that you will connect a single computer to the IPmodem.

If this is not the case or if you have another configuration, you will find more information in the Termincal User manual on the cd, in Appendixes A (Local Network Configuration) and E (Changing your IP settings).

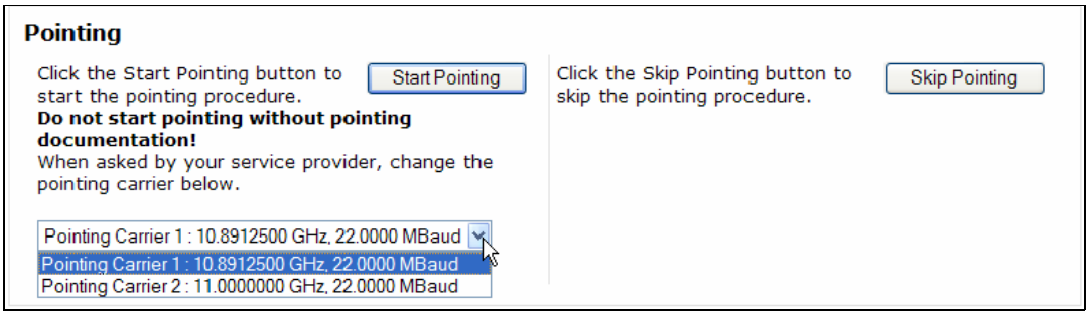
Before fine-pointing the antenna, you need to access the status page of the IPmodem.

1 Make sure the IPmodem is turned on and properly connected to your computer (with a network cable).

2 On your computer, start your internet browser (for example, Internet Explorer, Mozilla Firefox, Opera, Safari...).
The status page is located on the IPmodem itself. You do not need an internet connection to access this page.

3 Type **192.168.1.1** in the address bar of the browser and press **Enter**.
The status page opens.

4 Depending on your situation:
- If the page contains a list with more than one pointing carrier, keep the preselected carrier. If pointing fails during the procedure, you will need to select the other pointing carrier in the list and restart the entire procedure.
- If the satellite has only one pointing carrier, you will not see this list.


Pointing
Click the Start Pointing button to start the pointing procedure.
Start Pointing
Do not start pointing without pointing documentation!
When asked by your service provider, change the pointing carrier below.
Click the Skip Pointing button to skip the pointing procedure.
Skip Pointing
Pointing Carrier 1 : 10.8912500 GHz, 22.0000 MBaud
Pointing Carrier 1 : 10.8912500 GHz, 22.0000 MBaud
Pointing Carrier 2 : 11.0000000 GHz, 22.0000 MBaud

5 Click the **Start Pointing** button.
You can now start pointing the antenna.

Note
Whenever you redo the pointing procedure and access the IPmodem software, the button will be labelled **Restart Pointing** instead of **Start pointing**.

Using the Point&Play Tool

The Point&Play Tool will help you point the antenna correctly. During the pointing procedure, the Point&Play Tool can produce various sounds, each having a specific meaning described below. You will thus need to put on the headphone whenever needed during the pointing procedure.

Correct tone

The **high uninterrupted tone** means the antenna points correctly towards the satellite.

Possible tones are:

Very low uninterrupted tone

The antenna is not pointing to a satellite and has not been pointing to the correct satellite yet.

Low uninterrupted tone

The antenna points to a wrong satellite and receives the strongest signal so far.

Higher tone

The antenna points to the correct satellite and receives the strongest signal so far.

Higher interrupted tone

- The antenna points to the correct satellite and receives the strongest signal so far.
- The antenna only points to the correct satellite.
- As soon as you hear this tone, you are sure that the antenna points to the correct satellite.

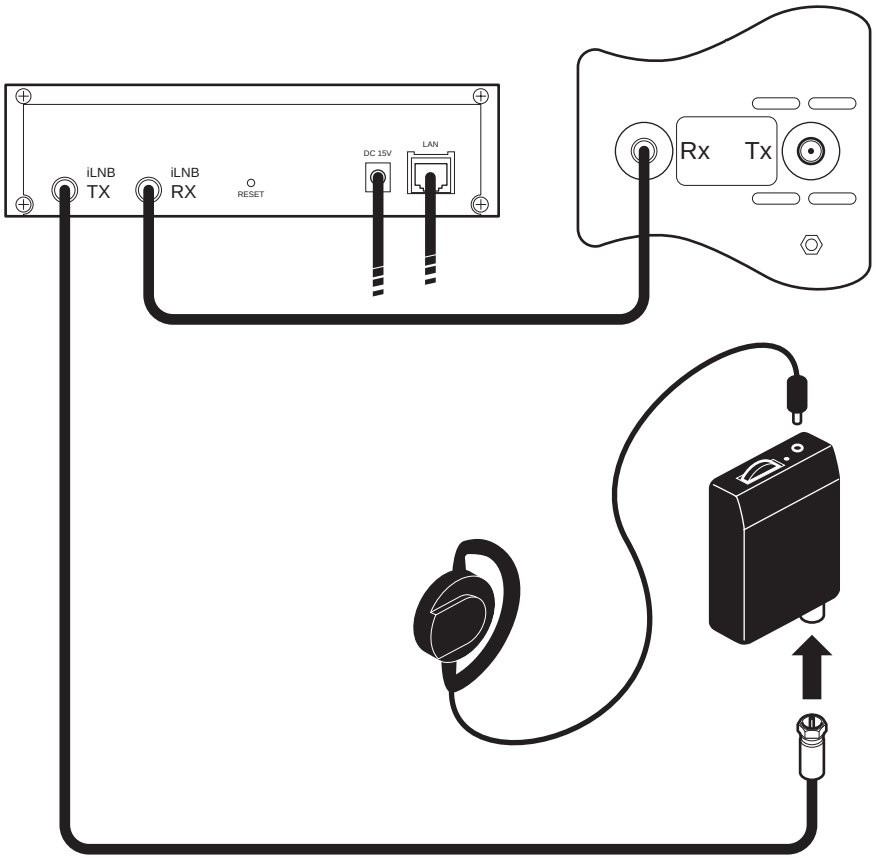
High uninterrupted tone (correct tone)

The antenna points to the correct satellite and is receiving the strongest signal possible: you have the optimal pointing position.

Setting up the Point&Play Tool

To set up the Point&Play Tool:

1. Connect the headphone to the appropriate port of the Point&Play Tool.
2. Remove the **TX** connector from the iLNB and connect it to the Point&Play Tool.
3. Make sure the Point&Play Tool is turned on and the volume is high enough.

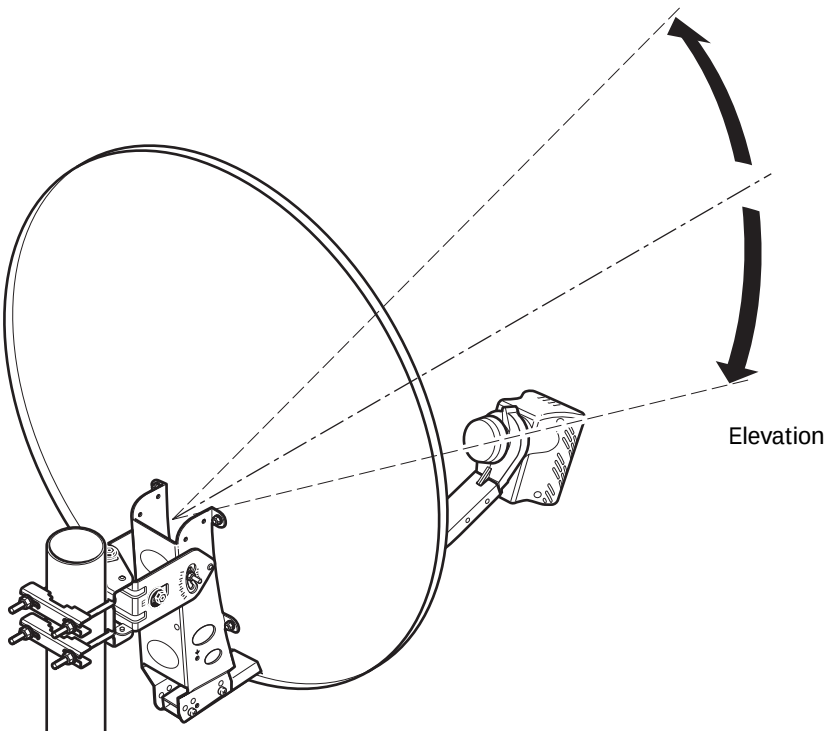


Rough pointing: vertical (elevation)

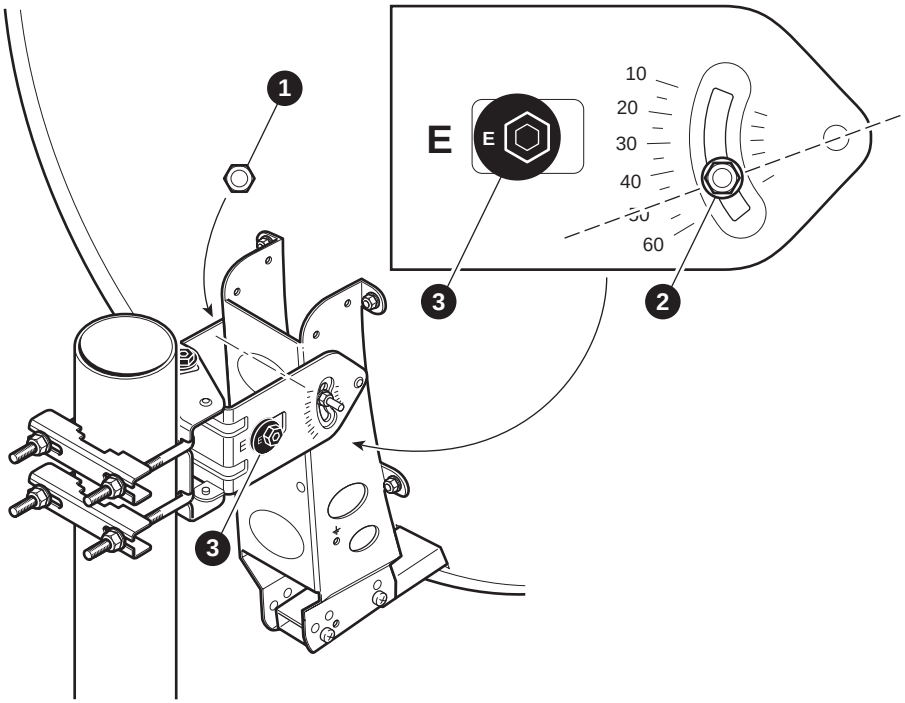
Important notes

- The procedures relating to rough horizontal and vertical pointing are described below in a sequential way. In reality, you will have to perform these two procedures simultaneously.
- Whenever the procedure tells you to loosen a securing bolt or nut, slacken it just enough to allow the corresponding element to move freely.
- While performing this vertical rough pointing, you will need to hold the antenna to prevent it from inadvertently losing its position.

1 In the **Antenna Pointing Information** document, first check the **elevation** for the city closest to your location.



2 Loosen securing bolts (1) and (2).



3 Use the hex key to rotate the eccentric (3) until the letters E on the eccentric and the masthead point towards each other, as shown in the figure above.

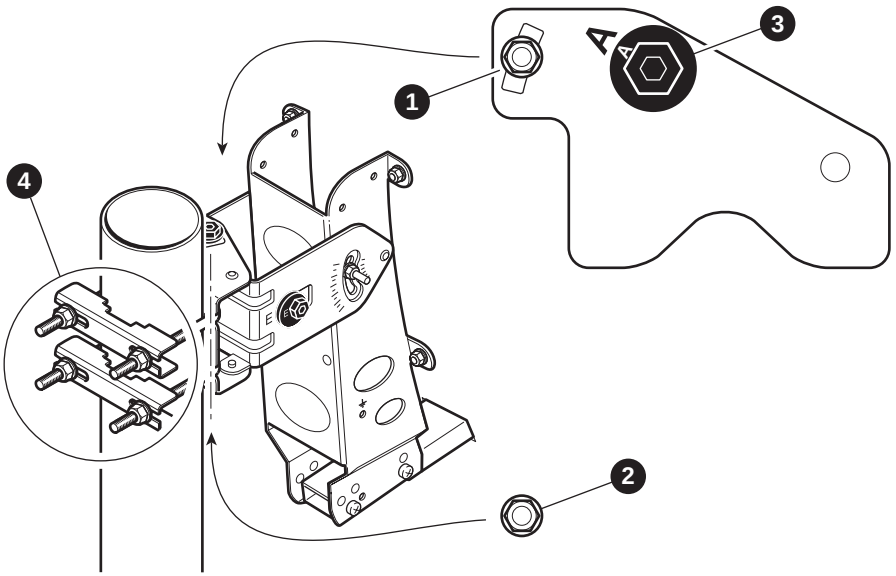
4 While keeping the eccentric in this position (with the hex key), set the dish to the elevation you found in the document. Bolt (2) indicates the elevation. In the figure above, the elevation is set to 49°.
You can now release the eccentric.

5 Secure bolts (1) and (2).
It is recommended **not** to secure the eccentric (as you may damage it by doing so).

Rough pointing: horizontal (azimuth)

To start horizontal pointing:

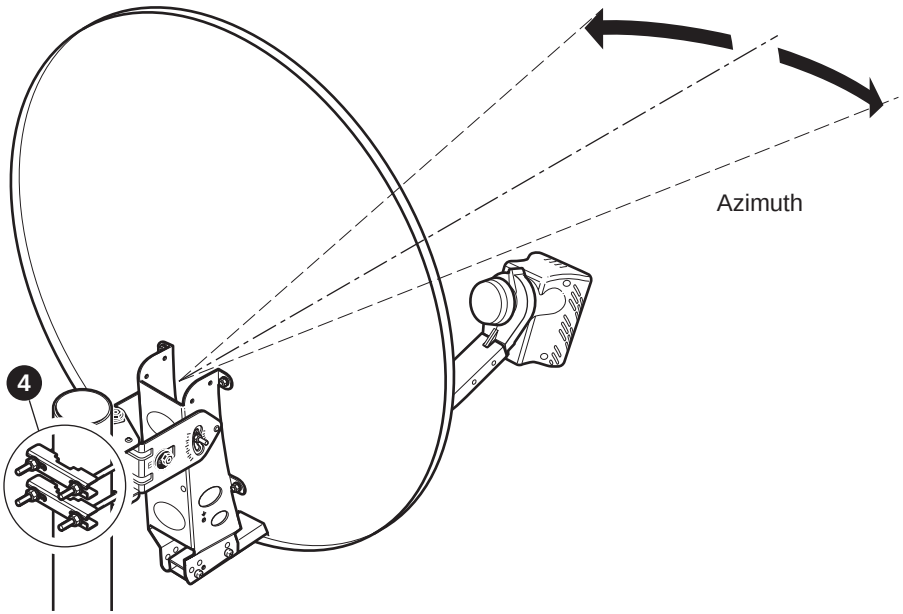
1 Loosen the lock bolts (1) and (2) of the eccentric (3).



2 Rotate the eccentric (3) with the hex key until the letters A on the eccentric and the masthead point towards each other, as shown in the figure above.

3 Secure the lock bolts (1) and (2).

4 Loosen the bracket nuts (4).
You can now move the antenna horizontally. Set the antenna to the azimuth the **Antenna Pointing Information** document mentions for the city closest to your location.



5 Move the dish horizontally and vertically until you hear the highest possible continuous high pitch tone.
Make sure to position the antenna in the middle of this tone range.

6 As soon as you hear this continuous high pitch tone, secure the bracket nuts (4).
It is recommended **not** to secure the eccentric (as you may damage it by doing so).

Persistent low pitch

If you keep hearing a low pitch tone, this might indicate one of the following issues:

- Check if you have a **clear line of sight**, and no building, tree or other obstruction is blocking the path between the antenna and the satellite.

- The **pointing carrier** selected in the IPmodem status page is **not correct**.
  If so, on the IPmodem status page on your computer:
  - Click **Pointing completed**.
  - Click **Restart Pointing**.
  - Select the other pointing carrier in the list and restart the entire pointing procedure.

- The antenna might be pointing to the **wrong satellite**.
  If so, you need to
  - repoint the antenna a few degrees to the left or right until you receive a signal;
  - perform the horizontal and vertical steps above until the antenna is pointing correctly towards the satellite.

Fine-pointing the antenna

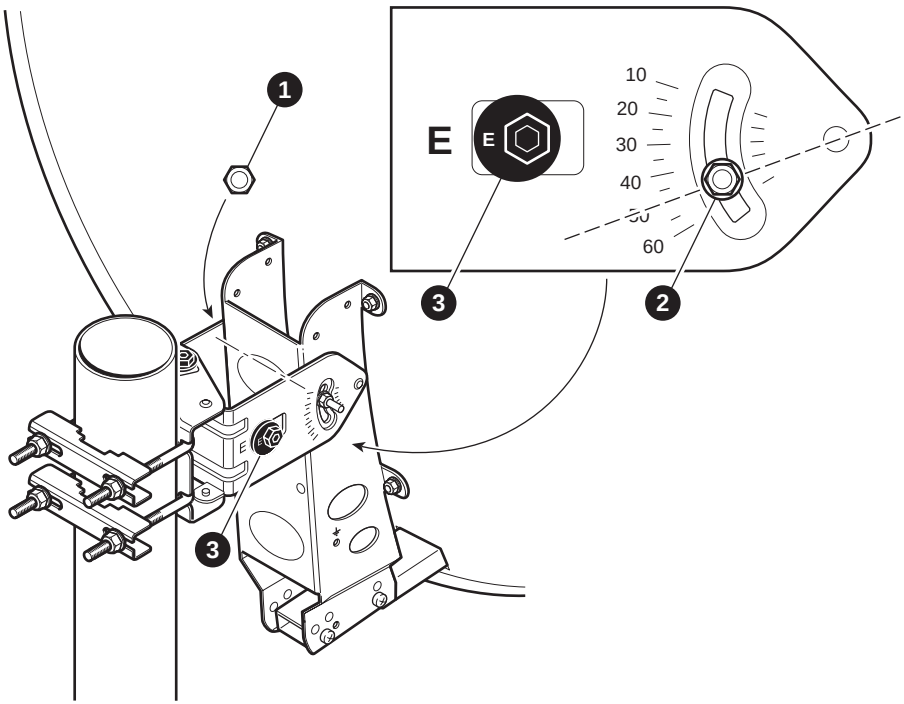
If the Point&Play Tool produces a persistent high pitch tone, you can skip this section and move to section “Checking the antenna pointing” on page 42.
If you do not hear a continuous high pitch tone after securing the bolts, the antenna will probably have moved slightly. You then need to fine-point the antenna.

Important note

The procedures relating to vertical and horizontal fine-pointing are described below in a sequential way. In reality, you will have to perform these procedures simultaneously.

Fine-pointing: vertical

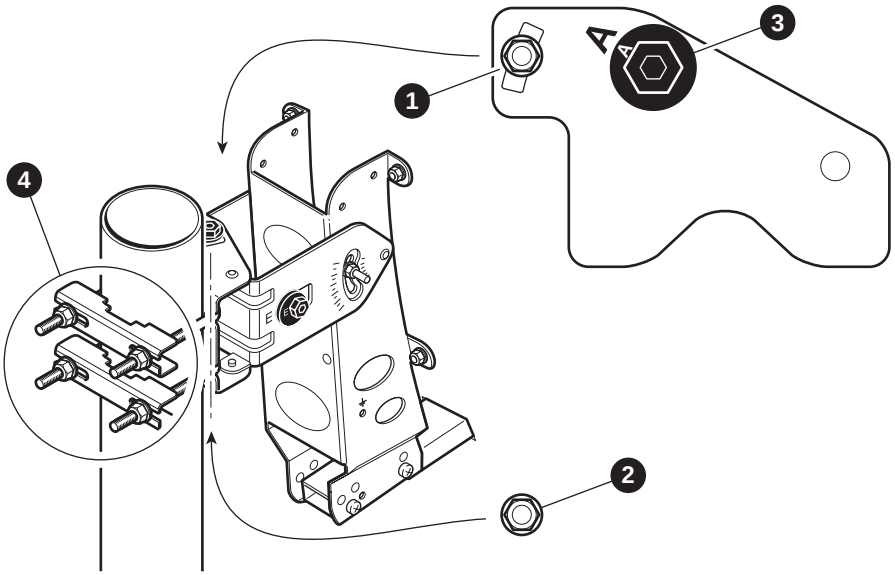
1 Loosen bolt (1).



2 Rotate the eccentric (3) until the Point&Play Tool produces a continuous high pitch tone.
3 Secure bolt (1).
4 Place the cap on bolt (2) and secure it with the appropriate nut.

Fine-pointing: horizontal

1 Loosen the horizontal lock bolt (1) and (2).

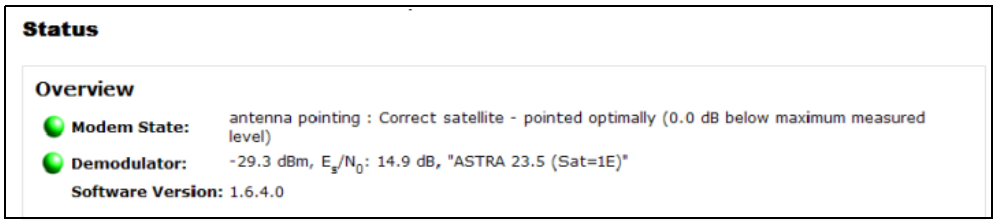


2 Rotate the eccentric (3) until the Point&Play Tool produces a continuous high pitch tone.
3 Secure the horizontal lock bolts (1) and (2).

Checking the antenna pointing

Perform the following checks to make sure the antenna will resist external movements (wind...):

1. Make sure all bolts are **tightly secured**.
2. Shortly place your hand between the iLNB and the dish. As soon as you remove your hand, you should hear the continuous high pitch tone again.
3. Exerce some pressure on the antenna to make it move about 3 cm to the left, right and upwards, then release it.
   If the antenna is still pointing correctly, you will hear the continuous high pitch tone again. If not, repeat the pointing procedure from the section **Rough pointing: horizontal (azimuth) (page 36)** until you obtain optimal signal reception and transmission.
4. When the antenna is pointing correctly, the status lights next to **Modem State** and **Demodulator** on the IPmodem status page will be **green**, as shown in the following picture.


Status
Overview
Modem State:
antenna pointing : Correct satellite - pointed optimally (0.0 dB below maximum measured level)
Demodulator:
-29.3 dBm, Es/N0: 14.9 dB, "ASTRA 23.5 (Sat=1E)"
Software Version: 1.6.4.0

Troubleshouting

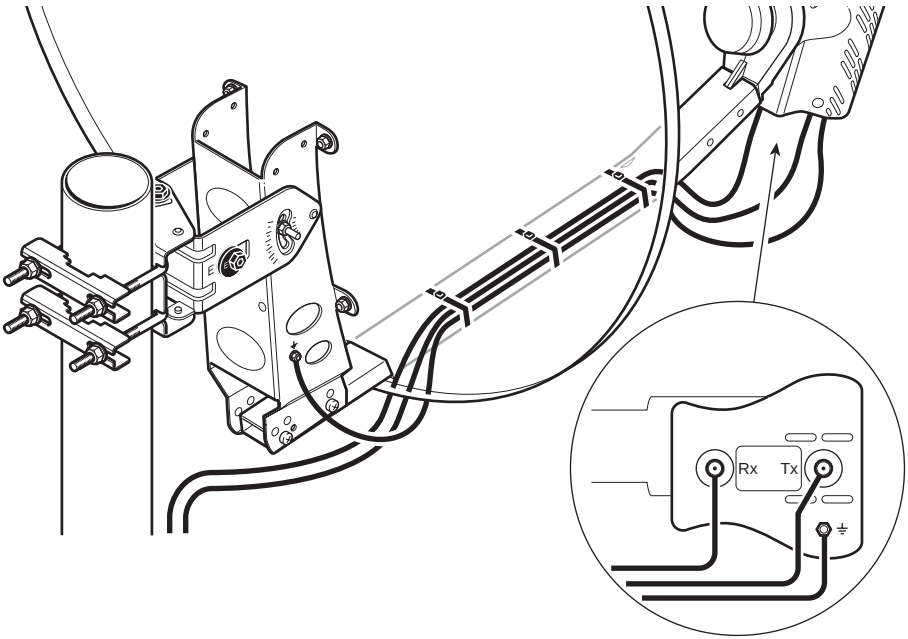
If you keep having problems with the installation, refer to the **Terminal User Manual** on the cd (Appendix C - Troubleshooting Guide).

Troubleshooting the IPmodem software

If the content of the IPmodem status page does not change anymore, refresh the page manually (Internet Explorer: menu File > Refresh; Mozilla Firefox: menu View > Reload...)
If the status page does not reload, reboot your IPmodem as described in the Terminal User Manual.

Finishing installation

1 When pointing is completed, you can turn off the Point&Play Tool
1 Remove the Tx cable from the Point&Play Tool and connect it to the iLNB.
2 Slide the rubber boots over the connectors.
3 Use tie-wraps to attach the cables to the feed arm.
Make sure to leave some slack on the cables.
The result should look like the figure below.



Confirming antenna pointing in the software

1 Back to your computer, in the status page of the IPmodem, click the **Pointing Completed** button.

You are now ready to surf the internet.